

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 – 11 (Canceled).

12. (New) A method for the assembly of a thin film comprising the steps of:
- (a) forming a layer-by-layer thin film comprised of a plurality of layers, in which each of said layers has average thickness of less than 100 nm, said layer-by-layer thin film formed upon a substrate by the substeps of:
    - (i) applying to said substrate a first aqueous solution or dispersion of a first substance, said first substance having an affinity for said substrate, to form a first layer;
    - (ii) rinsing said substrate with neat solvent;
    - (iii) applying to said substrate a second solution or dispersion of a second substance said second substance having an affinity for said first substance to form a second layer;
    - (iv) rinsing said substrate with neat solvent; and
  - (b) separating said substrate from said layer-by-layer thin film, overcoming the affinity between said first layer of said first substance and said substrate while retaining the affinity between said first substance and said second substance in said additional layers.

13. (New) The method of claim **12** further comprising the step of:  
  
applying said substrate to a support surface before said step of forming said layer-by-layer thin film.
14. (New) The method of claim **13** wherein step (b) comprises the steps of:  
  
(i) removing at least a portion of said substrate together with said layer-by-layer thin film from said support surface; and  
  
(ii) separating said substrate from said layer-by-layer thin film.
15. (New) The method of claim **12** wherein said step of applying to said substrate said first aqueous solution comprises immersing said substrate in said first aqueous solution.
16. (New) The method of claim **12** wherein step (b) comprises:  
  
dissolving, melting, etching or destroying said substrate in a solvent that does not destroy said layer-by-layer thin film.
17. (New) The method of claim **12** wherein step (b) comprises the steps of:  
  
melting said substrate at a temperature that does not destroy said layer-by-layer thin film.
18. (New) The method of claim **12** wherein step (b) comprises the steps of:  
  
chemically or physically treating said thin film assembly to destroy bonds between said

substrate and said thin film without destroying said layer-by-layer thin film.

19. (New) The method of claim **12** further comprising the step of:  
for at least one repetition of step (a)(i), replacing said first aqueous solution or dispersion of said first substance with a solution or dispersion of a third substance, said third substance having an affinity to said second substance.
20. (New) The method of claim **12** further comprising the step of:  
for at least one repetition of step (a)(iii), replacing the second solution or dispersion of said second substance with a solution or dispersion of a fourth substance, said fourth substance having an affinity to said first substance.
21. (New) The method of claim **12** wherein:  
for at least one repetition of step (a)(i), said first aqueous solution or dispersion of said first substance is of a biological compound.
22. (New) The method of claim **12** wherein:  
for at least one repetition of step a(iii), said second solution or dispersion of said second substance is of a biological compound.
23. (New) The method of claim **12** wherein:  
for at least one repetition of step (a)(i), said first aqueous solution or dispersion of said

first substance is comprised of a structural stabilizing material selected from a group consisting of macromolecules, exfoliated clay platelets, nanoparticles, nanowires, and carbon nanotubes.

24. (New) The method of claim **12** wherein:  
for at least one repetition of step (a)(iii), said second solution or dispersion of said second substance is comprised of a structural stabilizing material selected from a group consisting of macromolecules, exfoliated clay platelets, nanoparticles, nanowires, and carbon nanotubes.
25. (New) The method of claim **12** further comprising the step of:  
inducing cross-linking between said layers by means selected from a group consisting of chemical, radiative, photoreactive and thermal means.
26. (New) The method of claim **12** further comprising the step of repeating steps (a)(i) through (a)(iv) a predetermined number of times to form additional layers.